PRELIMINARY REPORT

Non-target Moth Survey
of North Fork and Cave Mountains
Seneca Rocks National Recreation Area
Potomac RD, West Virginia

Submitted to:

Monongahela National Forest
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PRELIMINARY REPORT

A comprehensive program of assessment of the nocturnal macrolepidoptera inhabiting six sites in the Seneca Rocks Recreation Area, and two sites in hardwood forests on the Allegheny Front has been completed.

Field work was conducted by the Nongame Wildlife and Natural Heritage Program, Wildlife Resources Division, West Virginia Division of Natural Resources (WVDNR). A total of 170 light trap samples were taken at eight sites from 22 March to 8 June 1994. These samples were quick-frozen and transported to the Carnegie Museum of Natural History (CMNH) where each was sorted by professional preparators into two fractions, non-Lepidoptera and Lepidoptera. The non-Lepidoptera components were preserved in ethanol and deposited in the bulk storage collections at CMNH for future reference and preparation. The Lepidoptera were then sorted by a specialist in order to extract a semi-quantitative sample of all species contained in each sample. These materials, a total of 12,957 specimens were professionally pinned and individually labelled with complete collection data. Prepared specimens were then sorted to species level, determined with individual identification labels, and the information data-based.

The result is a truly large amount of information quite thoroughly documenting the macrolepidopteran fauna of the region for the spring season. Despite the limited number of habitats it was possible to sample, this survey documents populations of more than half of the species of special concern that are known to be active during the spring months. In addition, it provides information on additional species including documentation of one with stenotopic ecology (*Properigea costa*) not previously known to occur in West Virginia.

An entomologist and botanist from CMNH visited each of the collection sites and took precise information on the size and location of all arborescent species with diameters larger than 5 cm at breast height (dbh) within a 75 foot radius of each light trap station. In addition, the occurrence of all other plant species observed within that radius were noted. All plant species, woody and herbaceous, were vouchered with botanical specimens, professionally prepared, curated, and deposited in the herbarium of CMNH for future reference or verification of plant associations for this study.

All of these activities took more time and effort than originally estimated, but the result is a truly large and unprecedented amount of information on the spring moth fauna and associated flora of the region. Because management decisions by staff at the Monongahela National Forest may benefit by the general conclusions and findings of this survey, this preliminary report has been

filed with essential information and recommendations concerning species currently listed of special concern. The following sections provide a quick overview of pertinent facts.

Meanwhile, work continues at CMNH to complete data analysis (particularly plant/moth correlation studies) and graphical presentation of both geographical and phenological distribution of all species. These facts, together with brief biological notes and comments for each species will comprise the final report to be completed by 1 December 1994 and to fulfill stated project objectives as follows:

1. List moth species sampled at sites representative of ecosystems occurring on the Monongahela NF on North Fork and Cave Mountains, Grant and Pendleton Counties, WV.
2. List floristic components at each of the collection sites for Lepidoptera.
3. Report on basic interpretations of data from field samples, including
    a. Current status of the moth fauna at each site.
    b. Compilation of moth species in the survey area to include a composite map showing the distribution and abundance of all moths species of special concern.
    c. Comments on all moth species collected, their food plants and life histories, and current status relative to the apparent health and integrity of ecosystems surveyed.
    d. Listing of moth species expected from the literature or other sources, but not actually collected during the survey.

SPECIES OF SPECIAL INTEREST DOCUMENTED DURING SENECA ROCKS SURVEY March-June 1994

A. MOTH SPECIES OF SPECIAL CONCERN, LISTED BY WEST VIRGINIA NATURAL HERITAGE PROGRAM

	Order/Genus and Species	Common Name
	Agrotis manifesta	See *Trichosilia manifesta* below
	Agrotis stigmosa A noctuid moth Recorded in Samples 408 and 411	
**	*Brachionycha borealis*	Boreal sprawler moth Recorded in Samples 102, 104, 105, 1055, 202, and 602
	Lithophane oriunda	A noctuid moth Recorded in Sample 800
**	*Lithophane* sp. 1, nr. *querquera*	A pinion moth *L. querquera sensu lato* recorded from Sites 1, 2, 5, and 6
	Trichosilia manifesta	A noctuid moth Recorded in Samples 116 and 609
	Zale calycanthata	A noctuid moth Recorded in Samples 104, 506, and 609
	Zale submediana	A noctuid moth Recorded at Sites 1, 2, 3, 4, and 6
	Zale squamularis	A noctuid moth Recorded in Samples 108 and 109

B. MOTH SPECIES NOT DOCUMENTED BY THIS SURVEY

	Grammia phyllira	A tiger moth
**	*Merolonche dolli*	Doll's merolonche moth [Flight may have preceded beginning of survey]
**	*Pyreferra ceromatica*	A noctuid moth

C. SPECIES OF SPECIAL CONCERN WITH FLIGHT PERIOD TOO LATE IN SEASON TO BE DOCUMENTED BY THIS SURVEY

	Anaplectoides brunneomedia	A noctuid moth
	Aplectoides condita	A noctuid moth
	Catocala dulciola	Sweet underwing moth
**	*Catocala herodias gerhardi*	Pine barrens underwing moth
	Catocala miranda	A noctuid moth
**	*Catocala marmorata*	A noctuid moth
	Chaetaglaea cerata	A noctuid moth
**	*Citheronia regalis*	Royal walnut moth
	Hadena ectypa	A noctuid moth
**	*Hyppa contrasta*	A noctuid moth
**	*Metarranthis apiciaria*	Barren's metarranthis moth

** West Virginia Natural Heritage State Element Ranking Form (SERF)

D. SPECIES OF SPECIAL INTEREST DOCUMENTED IN SURVEY BUT NOT LISTED BY WEST VIRGINIA NATURAL HERITAGE PROGRAM

Cicinnus melsheimeri Melscheimers sack bearer
Recorded in Samples 119, 220, and 718

Elaphria georgei A midget moth
Recorded in Sample 109, 508, and 609

Habrosyne gloriosa A thyatirid moth
Recorded in Sample 418

Properigea ?costa A noctuid moth STATE RECORD?
Recorded in Samples 417, 419, and 618

PRELIMINARY CONCLUSIONS AND MANAGEMENT RECOMMENDATIONS

GENERAL CONCLUSION: Site 1, Site 6, and Site 4 (in order of decreasing importance) contain sufficient, habitat-dependent macrolepidoptera species of special concern that their presence and sensitivity at those sites should be seriously considered before management decisions are made that would negatively influence their survival, specifically control measures for gypsy moth of which eggs masses were recorded at all three sites. Site 2, Site 3, and Site 5 are subordinate to Sites 1, 4, and 6 in this concern. No species of special concern were documented at Site 7 and only a single specimen at Site 8, and no special action at those sites is here recommended.

In particular, upland sites on North Fork, Cave, and Elkhorn Mountains that are easterly in aspect and have significant or adjacent stands of *Vaccinium* require special management consideration as they appear to be likely habitats for two extremely rare noctuid moths, *Brachionycha borealis* and *Trichosilia manifesta*.

Site 1. This is the site of maximum occurrence of the rare moth, *Brachionycha borealis*. In addition, additional species of special interest were collected here, including *Cicinnus melsheimeri*, *Lithophane querquera*, *Trichosilia manifesta*, and all three species of rare *Zale*, namely *Zale calycanthata*, *Z. submediana*, and *Z. squamularis*. The latter species was recorded exclusively from this site. This is a site characterized by an abundance of *Vaccinium*, *Kalmia*, and *Pinus virginiana*.

RECOMMENDATION: This is perhaps the site of greatest abundance of adult *Brachionycha borealis* on North Fork Mountain, and by inference is almost certainly a region of high larval density for that species in late April and May. If the larval hostplant for *borealis* is confirmed as *Vaccinium*, as recently observed in Canada (*pers. comm.* J. Lafontaine, Ottawa), then it is likely that this site is located on critical and limiting habitat for this rare species.

Several gypsy moth egg masses were observed at this site in September. Considering the number of non-target species of special concern that have been taken on this site, special management consideration should be given to it, particularly with respect to control measures for gypsy moth larvae that develop concurrently with larvae of *Brachionycha borealis*, *Zale squamularis*, and *Trichosilia manifesta*.

Site 2. This site has suffered much damage and tree death (primarily *Quercus prinus*) from recent gypsy moth infestations. The moth fauna as recorded in this study is distinctly subordinate to Site 1 in terms of rare species, but it did contain specimens of *Brachionycha borealis*, *Lithophane querquera*, *Zale submediana*, and *Cicinnus melsheimeri*.

RECOMMENDATION: A large number of gypsy moth egg masses were noted during the plant survey in September. Although of less concern than Site 1, this site does contain non-target species of special concern, and management practices should reflect this awareness.

Site 3. This site differs greatly in floristic composition from most other sites studied in this survey, with greatest similarity to the adjacent Site 4. Few species were restricted to this site, but it did produce specimens of *Zale submediana*.

RECOMMENDATION: No eggs masses of the gypsy moth were noted at this site during the plant assessment in September. The non-target fauna does not specifically warrant special management consideration with respect to gypsy moth control, but the proximity to Site 4 should be taken into consideration.

Site 4. This was the only site were *Agrotis stigmosa* and *Habrosyne gloriosa* were recorded, and in addition a dominant site for the occurrence of the previously unrecorded moth *Properigea costa*. Floristically, the habitat documented by this site is relatively fragile and limited to bottomland near the creek and along the adjacent river.

RECOMMENDATION: At least two rare species were recorded in this survey, and the bottomlands almost certainly harbor others flying later in the season and feeding on herbaceous plants. The fragile and limited extent of these habitats in the Smokehole suggest caution in application of control measures for gypsy moth, although several egg masses were observed in September during the plant survey of the site.

Site 5. This site is located above cliffs near the south end of Cave Mountain, above habitats characterized by limestone bearing a distinctive herbaceous and suffrutescent flora. *Zale calycanthata* was taken here, but the fauna was less distinctive than expected. It is likely that many of the unusual species to be expected here fly later in the season and were not recorded during the survey period, such as species of *Oligia*, *Papaipema*, *Septis*, and *Itame*.

RECOMMENDATION: Many gypsy moth egg masses were noted during the plant survey, and it is likely that significant outbreak will occur at this site on various oaks during 1995. The absence of non-target moths of exceptional rarity or concern during this study should not be construed as evidence that the fauna lacks endemic elements. This site requires further study, and emphasizes the inappropriate nature of this survey in terminating sampling by mid-June, before the flight period of non-target species of special concern that have larvae feeding on herbaceous hostplants. *Properigea costa* is a species with an unknown life history, but is largely restricted to shale barrens and limestone habitats in other states where it has been recorded (KY, MD, NY, PA, VT). It is surprising that no specimens of *costa* were taken at this site which has greatest proximity to limestone. The presence of *costa* at both Site 4 and Site 6 suggests that it would also be found at this site as well.

Site 6. This site is partly disturbed, and contains much second-growth of *Acer pensylvanicum* and *Robinia pseudoacacia*. Despite this, it borders on more stable forest habitats and with a location on the top of Cave Mountain produce a number of exceptional captures. *Brachionycha*

borealis was taken here, as was *Zale submediana*, *Zale calycanthata*, most of the observed specimens of *Properigea costa* and *Trichosilia manifesta*. The fauna has affinity for Site 1, and somewhat less so for the adjacent Site 5.

RECOMMENDATION: Many egg masses of the gypsy moth were noted at Site 6, but the presence of at least three rare species with concurrent larval phenologies to the gypsy moth suggest that restraint in application of control measures for gypsy moth be seriously considered at this site.

Site 7. This site on the Allegheny Front is dominated by maples and oak, and the moth fauna largely consisted of abundant and widespread forest species. A specimen of *Cicinnus melsheimeri* was captured, but the remaining fauna was not distinctive or endemic.

RECOMMENDATION: No special action. Egg masses of gypsy moth were noted on this site during plant survey, but absence of non-target moths of special interest in sample does not support restriction on control measures.

Site 8. This site was very similar to the adjacent Site 7. A single specimen of *Lithophane oriunda* was documented at this site, but no other specimens of special interest were taken.

RECOMMENDATION: No special action. No egg masses of gypsy moth were noted on this site during plant survey, but close proximity to Site 7 suggests that gypsy moth impact is likely. In such event, the single record of one species of special interest at this site does not support restriction on control measures for gypsy moth.

SAMPLES TAKEN DURING 1994 MACROLEPIDOPTERA SURVEY ON MONONGAHELA NATIONAL FOREST, SENECA ROCKS NATIONAL RECREATION AREA

Site 1. WEST VIRGINIA: Grant Co., 6.5 km SSE Hopeville, W slope North Fork Mountain, Redman Trail, 38-54N,79-16W, 840 m. [23 samples]

Sample No. 100 on 22 March 1994
Sample No. 1005 on 24 March 1994
Sample No. 101 on 28 March 1994
Sample No. 102 on 4 April 1994
Sample No. 104 on 12 April 1994
Sample No. 105 on 13 April 1994
Sample No. 1055 on 14 April 1994
Sample No. 1056 on 18 April 1994
Sample No. 106 on 19 April 1994
Sample No. 107 on 21 April 1994
Sample No. 108 on 25 April 1994
Sample No. 109 on 28 April 1994
Sample No. 111 on 5 May 1994
Sample No. 112 on 11 May 1994
Sample No. 113 on 12 May 1994
Sample No. 114 on 18 May 1994
Sample No. 115 on 19 May 1994
Sample No. 116 on 25 May 1994
Sample No. 1165 on 26 May 1994
Sample No. 117 on 31 May 1994
Sample No. 118 on 1 June 1994
Sample No. 119 on 7 June 1994
Sample No. 120 on 8 June 1994

Site 2. WEST VIRGINIA: Grant Co., 6.3 km SSE Hopeville, W slope North Fork Mountain, Redman Trail, 38-55N,79-16W, 780 m. [19 samples]

Sample No. 200 on 22 March 1994
Sample No. 2005 on 24 March 1994
Sample No. 201 on 28 March 1994
Sample No. 202 on 4 April 1994
Sample No. 204 on 12 April 1994
Sample No. 205 on 13 April 1994
Sample No. 206 on 19 April 1994
Sample No. 207 on 21 April 1994
Sample No. 208 on 25 April 1994
Sample No. 209 on 28 April 1994
Sample No. 211 on 5 May 1994
Sample No. 212 on 11 May 1994
Sample No. 213 on 12 May 1994
Sample No. 215 on 19 May 1994
Sample No. 216 on 25 May 1994
Sample No. 217 on 31 May 1994
Sample No. 218 on 1 June 1994
Sample No. 219 on 7 June 1994
Sample No. 220 on 8 June 1994

Site 3. WEST VIRGINIA: Pendleton Co., 9.8 km N Upper Tract, Long Run near South Branch Potomac River, 38-53N, 79-16W, 375 m. [24 samples]

Sample No. 300 on 22 March 1994
Sample No. 3005 on 24 March 1994
Sample No. 301 on 28 March 1994
Sample No. 3015 on 29 March 1994
Sample No. 302 on 4 April 1994
Sample No. 303 on 7 April 1994
Sample No. 304 on 11 April 1994
Sample No. 305 on 13 April 1994
Sample No. 306 on 19 April 1994
Sample No. 307 on 21 April 1994
Sample No. 308 on 25 April 1994
Sample No. 309 on 28 April 1994
Sample No. 310 on 4 May 1994
Sample No. 311 on 5 May 1994
Sample No. 312 on 11 May 1994
Sample No. 313 on 12 May 1994
Sample No. 314 on 18 May 1994
Sample No. 315 on 19 May 1994
Sample No. 316 on 25 May 1994
Sample No. 3165 on 26 May 1994
Sample No. 317 on 31 May 1994
Sample No. 318 on 1 June 1994
Sample No. 319 on 7 June 1994
Sample No. 320 on 8 June 1994

Site 4. WEST VIRGINIA: Pendleton Co., 9.8 km N Upper Tract, Long Run near South Branch Potomac River, 38-53N, 79-16W, 370 m. [22 samples]

Sample No. 400 on 22 March 1994
Sample No. 4005 on 24 March 1994
Sample No. 401 on 28 March 1994
Sample No. 402 on 4 April 1994
Sample No. 404 on 11 April 1994
Sample No. 405 on 13 April 1994
Sample No. 406 on 19 April 1994
Sample No. 407 on 21 April 1994
Sample No. 408 on 25 April 1994
Sample No. 409 on 28 April 1994
Sample No. 410 on 4 May 1994
Sample No. 411 on 5 May 1994
Sample No. 412 on 11 May 1994
Sample No. 413 on 12 May 1994
Sample No. 414 on 18 May 1994

Sample No. 415 on 19 May 1994
Sample No. 416 on 25 May 1994
Sample No. 4165 on 26 May 1994
Sample No. 417 on 31 May 1994
Sample No. 418 on 1 June 1994
Sample No. 419 on 7 June 1994
Sample No. 420 on 8 June 1994

Site 5. WEST VIRGINIA: Pendleton Co., 4.3 km N Upper Tract, Cave Mountain, 38-50N, 79-17W, 750 m., oak/pine forest, cliffs. [20 samples]
Sample No. 5005 on 24 March 1994
Sample No. 502 on 4 April 1994
Sample No. 504 on 11 April 1994
Sample No. 505 on 13 April 1994
Sample No. 506 on 19 April 1994
Sample No. 507 on 21 April 1994
Sample No. 508 on 25 April 1994
Sample No. 509 on 28 April 1994
Sample No. 510 on 4 May 1994
Sample No. 511 on 5 May 1994
Sample No. 512 on 11 May 1994
Sample No. 513 on 12 May 1994
Sample No. 514 on 18 May 1994
Sample No. 515 on 19 May 1994
Sample No. 516 on 25 May 1994
Sample No. 5165 on 26 May 1994
Sample No. 517 on 31 May 1994
Sample No. 518 on 1 June 1994
Sample No. 519 on 7 June 1994
Sample No. 520 on 8 June 1994

Site 6. WEST VIRGINIA: Pendleton Co., 4.3 km N Upper Tract, Cave Mountain, 38-50N, 79-17W, 760 m., striped maple/oaks. [21 samples]
Sample No. 600 on 22 March 1994
Sample No. 6005 on 24 March 1994
Sample No. 6015 on 29 March 1994
Sample No. 602 on 4 April 1994
Sample No. 604 on 11 April 1994
Sample No. 605 on 13 April 1994
Sample No. 606 on 19 April 1994
Sample No. 608 on 25 April 1994
Sample No. 609 on 28 April 1994
Sample No. 610 on 4 May 1994
Sample No. 611 on 5 May 1994
Sample No. 612 on 11 May 1994
Sample No. 613 on 12 May 1994
Sample No. 614 on 18 May 1994
Sample No. 615 on 19 May 1994
Sample No. 616 on 25 May 1994
Sample No. 6165 on 26 May 1994
Sample No. 617 on 31 May 1994
Sample No. 618 on 1 June 1994
Sample No. 619 on 7 June 1994
Sample No. 620 on 8 June 1994

Site 7. WEST VIRGINIA: Grant Co., 3.7 km WNW Hopeville, upper Broad Run, 38-58N, 79-20W, 980 m., oak/maple forest. [20 samples]
Sample No. 700 on 22 March 1994
Sample No. 7005 on 24 March 1994
Sample No. 702 on 4 April 1994
Sample No. 704 on 11 April 1994
Sample No. 705 on 13 April 1994
Sample No. 706 on 19 April 1994
Sample No. 707 on 21 April 1994
Sample No. 708 on 25 April 1994
Sample No. 709 on 28 April 1994
Sample No. 710 on 4 May 1994
Sample No. 711 on 5 May 1994
Sample No. 712 on 11 May 1994
Sample No. 713 on 12 May 1994
Sample No. 715 on 19 May 1994
Sample No. 716 on 25 May 1994
Sample No. 7165 on 26 May 1994
Sample No. 717 on 31 May 1994
Sample No. 718 on 1 June 1994
Sample No. 719 on 7 June 1994
Sample No. 720 on 8 June 1994

Site 8. WEST VIRGINIA: Grant Co., 3.7 km WNW Hopeville, upper Broad Run, 38-58N, 79-20W, 970 m., oak/maple forest. [21 samples]
Sample No. 800 on 22 March 1994
Sample No. 8005 on 24 March 1994
Sample No. 801 on 28 March 1994
Sample No. 802 on 4 April 1994
Sample No. 804 on 11 April 1994
Sample No. 805 on 13 April 1994
Sample No. 806 on 19 April 1994
Sample No. 807 on 21 April 1994
Sample No. 808 on 25 April 1994
Sample No. 809 on 28 April 1994
Sample No. 810 on 4 May 1994
Sample No. 811 on 5 May 1994
Sample No. 812 on 11 May 1994
Sample No. 813 on 12 May 1994
Sample No. 815 on 19 May 1994
Sample No. 816 on 25 May 1994
Sample No. 8165 on 26 May 1994
Sample No. 817 on 31 May 1994
Sample No. 818 on 1 June 1994
Sample No. 819 on 7 June 1994
Sample No. 820 on 8 June 1994

NOCTURNAL MACROLEPIDOPTERA SPECIMENS PREPARED AND IDENTIFIED DURING 1994 SURVEY
MONONGAHELA NATIONAL FOREST, SENECA ROCKS NATIONAL RECREATION AREA

TOTAL SPECIMENS	**12,957 specimens**
Site 1	**2,123 specimens**
Site 2	**1,396 specimens**
Site 3	**1,479 specimens**
Site 4	**1,965 specimens**
Site 5	**1,410 specimens**
Site 6	**2,376 specimens**
Site 7	**1,162 specimens**
Site 8	**1,046 specimens**

SAMPLE	TRAPPING METHOD	NUMBER OF SPECIMENS
100	Light trap	48
1005	Light trap	51
101	Light trap	1
102	Light trap	29
104	Bait trap	3
104	Light trap	87
105	Light trap	69
1055	Light trap	110
1056	Light trap	70
106	Light trap	80
107	Light trap	66
108	Light trap	72
109	Bait trap	1
109	Light trap	192
111	Light trap	32
112	Light trap	205
113	Light trap	11
114	Light trap	3
115	Light trap	34
116	Light trap	152
116	Light trap	115
117	Light trap	203
118	Light trap	107
119	Light trap	123
120	Light trap	259
200	Light trap	27
2005	Light trap	21
201	Light trap	1
202	Light trap	7
204	Light trap	44
205	Light trap	32
206	Bait trap	1
206	Light trap	49
207	Light trap	39
208	Light trap	25
209	Bait trap	2
211	Light trap	29
212	Light trap	169
209	Light trap	68

SAMPLE	TRAPPING METHOD	NUMBER OF SPECIMENS
213	Light trap	3
215	Light trap	41
216	Light trap	205
217	Light trap	155
218	Light trap	83
219	Light trap	180
220	Light trap	215
300	Light trap	1
3005	Bait trap	3
3005	Light trap	25
301	Light trap	4
3015	Light trap	2
302	Light trap	7
303	Bait trap	1
304	Light trap	7
305	Light trap	65
306	Light trap	35
307	Light trap	65
308	Light trap	70
309	Light trap	71
310	Light trap	5
311	Light trap	48
312	Light trap	131
313	Light trap	30
314	Light trap	23
315	Light trap	62
316	Light trap	138
3165	Light trap	78
317	Light trap	237
318	Light trap	134
319	Light trap	??
320	Light trap	237
400	Light trap	5
4005	Bait trap	3
4005	Light trap	9
401	Light trap	2
402	Bait trap	2
402	Light trap	8
404	Light trap	21
405	Bait trap	1
405	Light trap	58
406	Bait trap	1
406	Light trap	50
407	Light trap	51
408	Bait trap	2
408	Light trap	61
409	Light trap	50
410	Light trap	4
411	Light trap	36
412	Light trap	120
413	Light trap	42

SAMPLE	TRAPPING METHOD	NUMBER OF SPECIMENS
414	Light trap	22
415	Light trap	86
416	Light trap	151
4165	Light trap	76
417	Light trap	238
418	Light trap	235
419	Light trap	320
420	Light trap	311
5005	Bait trap	2
5005	Light trap	37
502	Light trap	33
504	Light trap	1
505	Light trap	11
506	Light trap	71
507	Light trap	55
507	Light trap	44
508	Light trap	126
509	Bait trap	1
510	Light trap	1
511	Light trap	16
512	Light trap	39
513	Light trap	17
514	Light trap	1
515	Light trap	56
516	Light trap	79
5165	Light trap	105
517	Light trap	136
518	Light trap	236
519	Light trap	244
520	Light trap	99
600	Light trap	1
6005	Light trap	17
6015	Light trap	3
602	Light trap	37
604	Light trap	3
605	Bait trap	3
605	Light trap	35
606	Bait trap	2
606	Light trap	91
608	Bait trap	1
608	Light trap	124
609	Bait trap	3
609	Light trap	363
610	Light trap	1
611	Light trap	48
612	Light trap	267
613	Light trap	18
614	Light trap	1
615	Light trap	49
616	Light trap	172
6165	Light trap	152

SAMPLE	TRAPPING METHOD	NUMBER OF SPECIMENS
617	Light trap	194
618	Light trap	156
619	Light trap	416
620	Light trap	219
700	Light trap	21
7005	Light trap	24
702	Bait trap	2
702	Light trap	15
704	Light trap	1
705	Light trap	57
706	Light trap	72
707	Light trap	93
708	Light trap	69
709	Bait trap	5
709	Light trap	98
710	Light trap	??
711	Bait trap	3
711	Light trap	15
712	Light trap	83
713	Light trap	5
715	Light trap	7
716	Light trap	74
7165	Light trap	46
717	Light trap	145
718	Light trap	90
719	Light trap	167
720	Light trap	70
800	Light trap	43
8005	Bait trap	1
801	Light trap	3
802	Light trap	18
804	Light trap	2
805	Light trap	67
806	Bait trap	2
806	Light trap	91
807	Bait trap	1
807	Light trap	99
808	Light trap	60
809	Light trap	55
810	Light trap	1
811	Light trap	9
812	Light trap	95
813	Light trap	3
815	Light trap	4
816	Light trap	70
8165	Light trap	73
817	Light trap	116
818	Light trap	119
819	Light trap	47
820	Light trap	67

ANALYSIS OF VEGETATION SURROUNDING LIGHT TRAPS
1994 MACROLEPIDOPTERA SURVEY ON MONONGAHELA NATIONAL FOREST
ARBORESCENT PLANTS FOUND AT SURVEY SITES

Site 1. Upper Redman Trail

Acer nigrum
Acer pensylvanicum
Acer rubrum
Acer saccharum
Amelanchier sp.
Betula lenta
Castanea dentata
Cornus florida
Hamamelis virginiana
Juglans sp.
Kalmia latifolia
Nyssa sylvatica
Pinus virginiana
Quercus prinus
Quercus rubra/coccinea
Quercus velutina
Robinia pseudoacacia
Vitis sp.

Site 2. Lower Redman Trail

Acer pensylvanicum
Acer rubrum
Acer saccharum
Carya sp.
Castanea dentata
Cornus florida
Nyssa sylvatica
Quercus prinus
Quercus rubra/coccinea
Quercus velutina
Sassafras albidum
Vitis sp.

Site 3. Upper Smokehole

Acer pensylvanicum
Acer saccharum
Asimina triloba
Betula lenta
Carpinus caroliniana
Carya sp.
Cercis canadensis
Fraxinus sp.
Hamamelis virginiana
Juglans sp.
Liriodendron tulipifera
Paulownia tomentosa
Platanus occidentalis
Quercus rubra/coccinea
Quercus velutina
Tilia americana
Tsuga canadensis
Ulmus rubra

Site 4. Lower Smokehole

Acer saccharum
Ailanthus altissima
Asimina triloba
Betula lenta
Cercis canadensis
Fraxinus sp.
Juglans sp.
Liriodendron tulipifera
Lonicera sp.
Ostrya virginiana
Paulownia tomentosa
Pinus strobus
Platanus occidentalis
Prunus serotina
Quercus velutina
Rhus typhina
Robinia pseudoacacia
Tilia americana
Ulmus rubra
Vitis sp.

Site 5. Above Cliffs, Cave Mountain

Acer pensylvanicum
Acer rubrum
Acer saccharum
Amelanchier sp.
Carya sp.
Cercis canadensis
Cornus florida
Fraxinus sp.
Hamamelis virginiana
Juglans sp.
Juniperus virginiana
Ostrya virginiana
Pinus strobus
Pinus virginiana
Quercus prinus
Quercus rubra/coccinea
Quercus velutina
Robinia pseudoacacia
Tilia americana
Ulmus rubra
Vitis sp.

Site 6. Forest, Cave Mountain

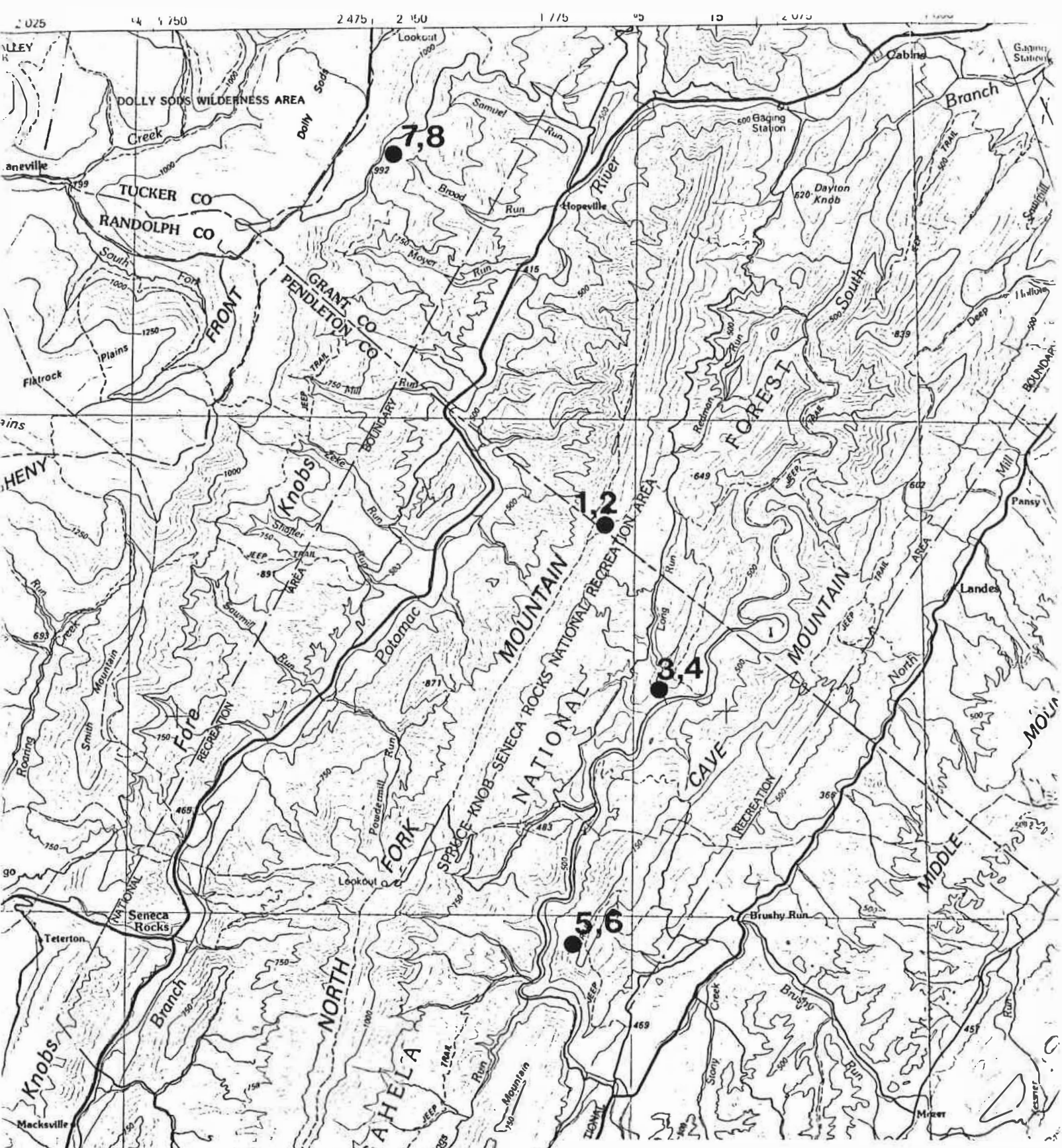
Acer pensylvanicum
Acer saccharum
Ailanthus altissima
Asimina triloba
Betula lenta
Carya sp.
Cornus florida
Fraxinus sp.
Juglans sp.
Liriodendron tulipifera
Nyssa sylvatica
Quercus alba
Quercus prinus
Quercus rubra/coccinea
Quercus velutina
Robinia pseudoacacia
Ulmus rubra
Vitis sp.

Site 7. Upper Allegheny Front

Acer pensylvanicum
Acer rubrum
Acer saccharum
Betula lenta
Carya sp.
Fraxinus sp.
Magnolia acuminata
Prunus serotina
Quercus alba
Quercus rubra/coccinea

Site 7. Lower Allegheny Front

Acer pensylvanicum
Acer rubrum
Acer saccharum
Carya sp.
Fraxinus sp.
Magnolia acuminata
Prunus serotina
Quercus rubra/coccinea
Robinia pseudoacacia
Tilia americana



1994 MOTH SURVEY SITES

1, 2 = REDMAN RUN

3, 4 = LONG RUN

5, 6 = CAVE MOUNTAIN

7, 8 = UPPER BROAD RUN